DR-55 SERVICE NOTES

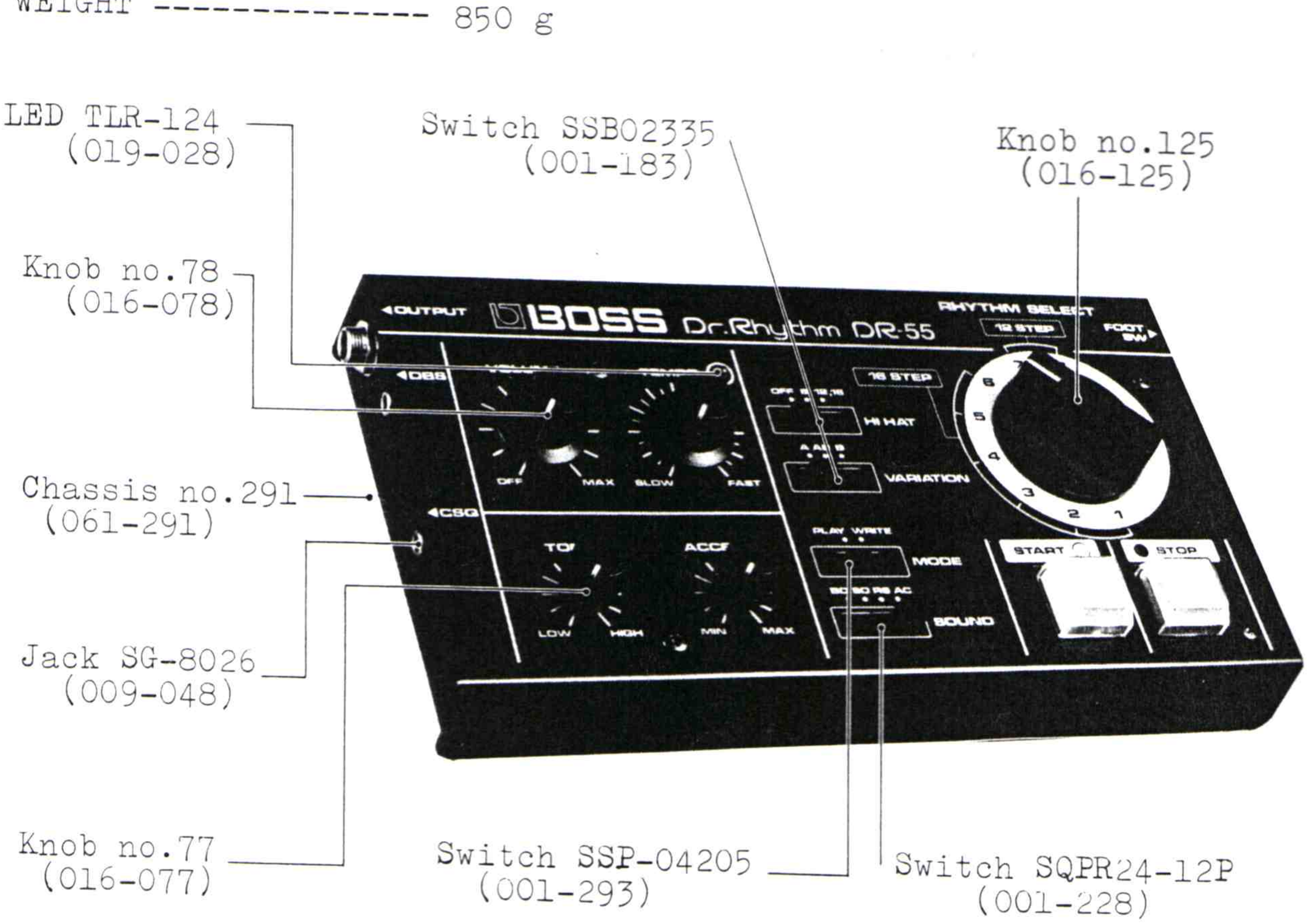
SPECIFICATIONS

OUTPUT DBS : +5 V (8 ms) CSQ : +4 V (10 ms)

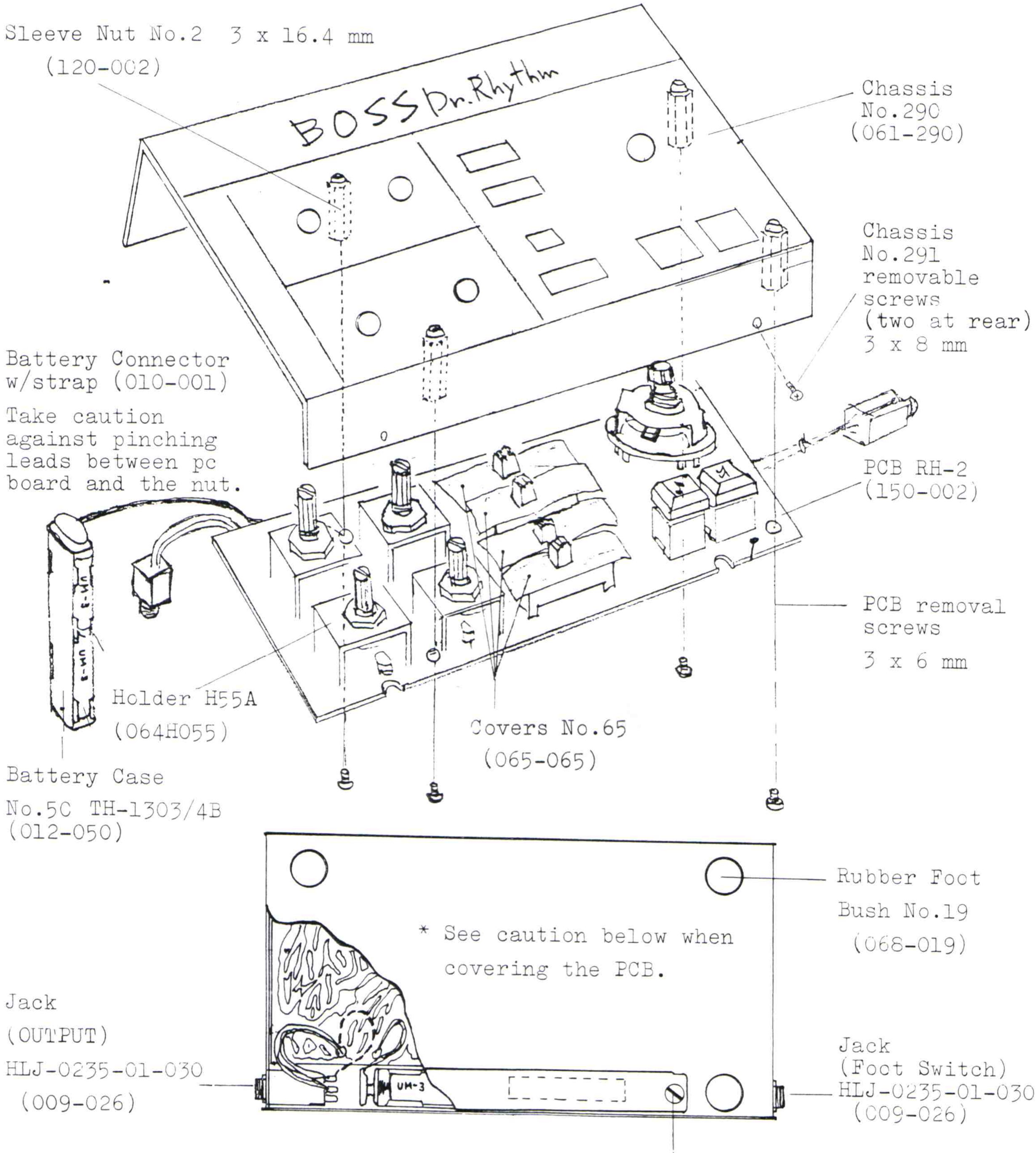
VOICE : (at OUTPUT Jack, Power source 6 V)
VOLUME, TONE : at max. ACCENT : at min.

	Amplitude (Vpp)			Frequency (Hz)			Decay (ms)		
	min.	avr.	max.	min.	avr.	max.	min.	avr.	max.
BD	1.0	1.3	1.6	14	62 (16 ms)	18			
RS	0.7	0.9	1.2	0.65	0.75 (1330 ms)	0.85	5	7	10
SD (noise)	0.3	0.4 1.2	0.6	2.7	3.1 (320 ms)	3.5	55	75	100
HH		1.2					35	50	70

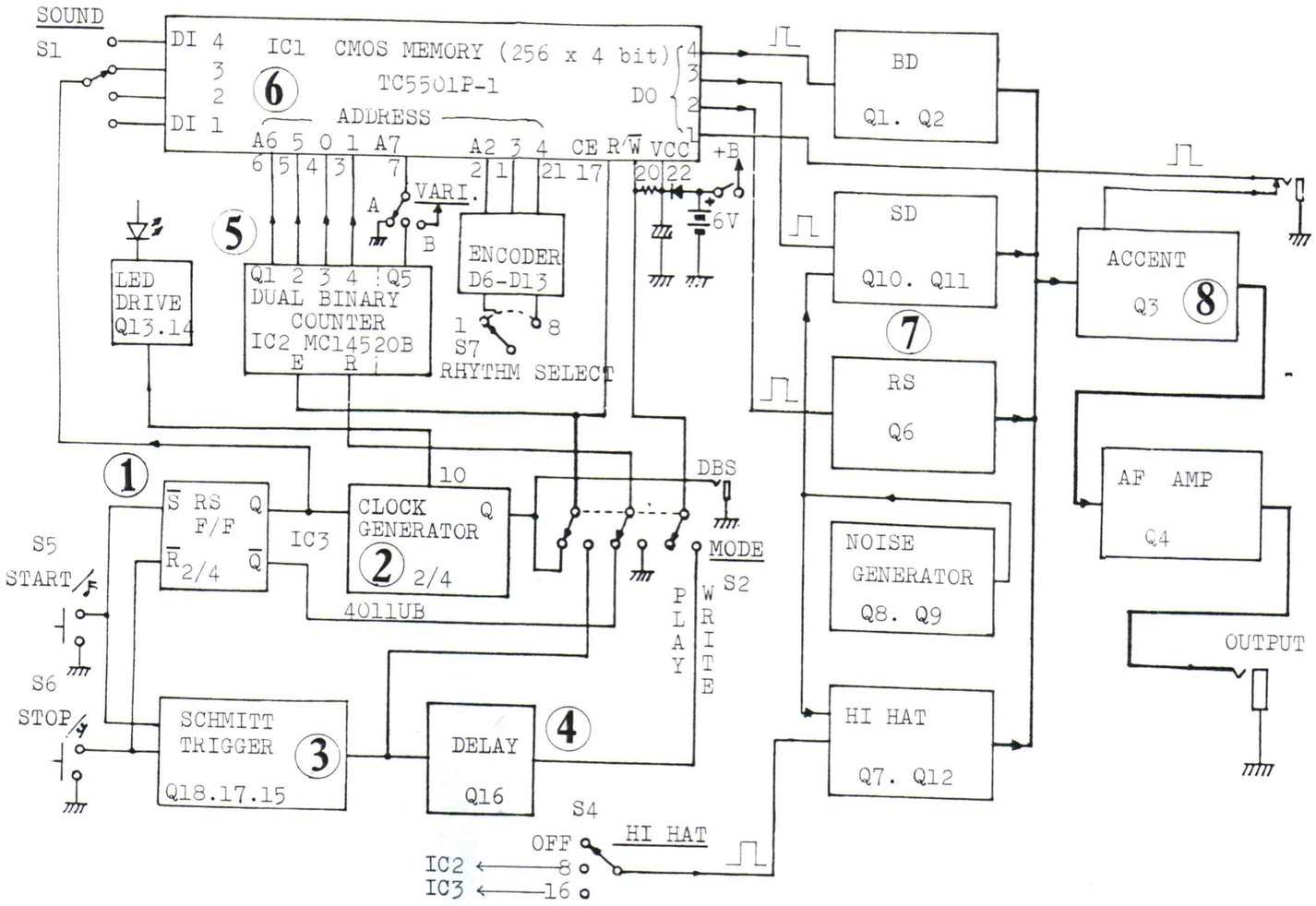
POWER REQUIREMENTS -- 4.5 V-6.5 V. (Current draw 5.5 mA @6 V)
DIMENSIONS -------- 211 (W) x 116 (D) x 53 (H) mm
WEIGHT ---------- 850 g



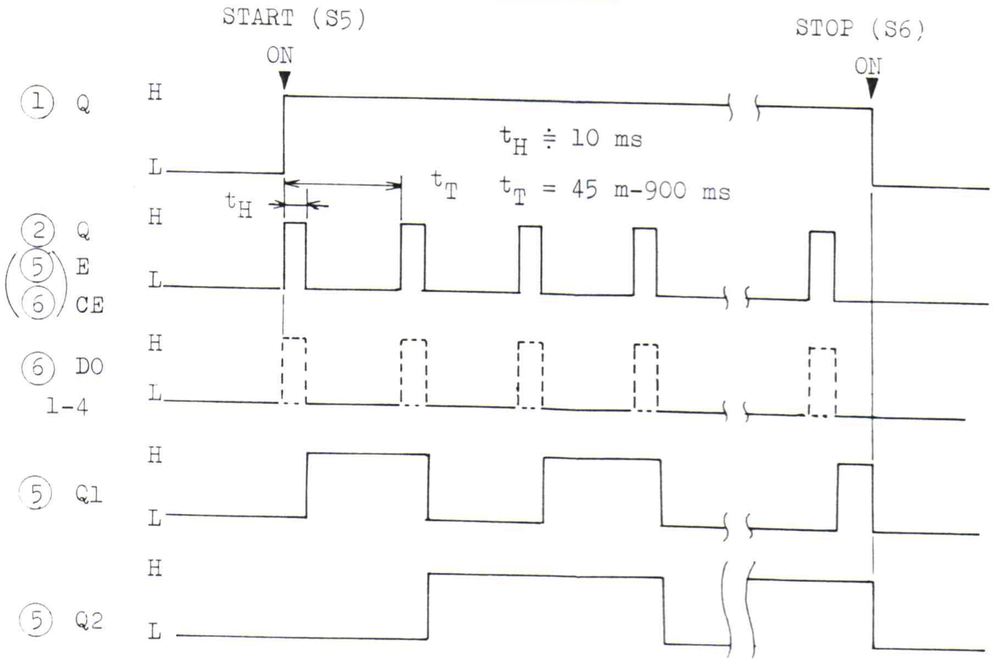
* For the START and STOP switches, refer to the Parts List



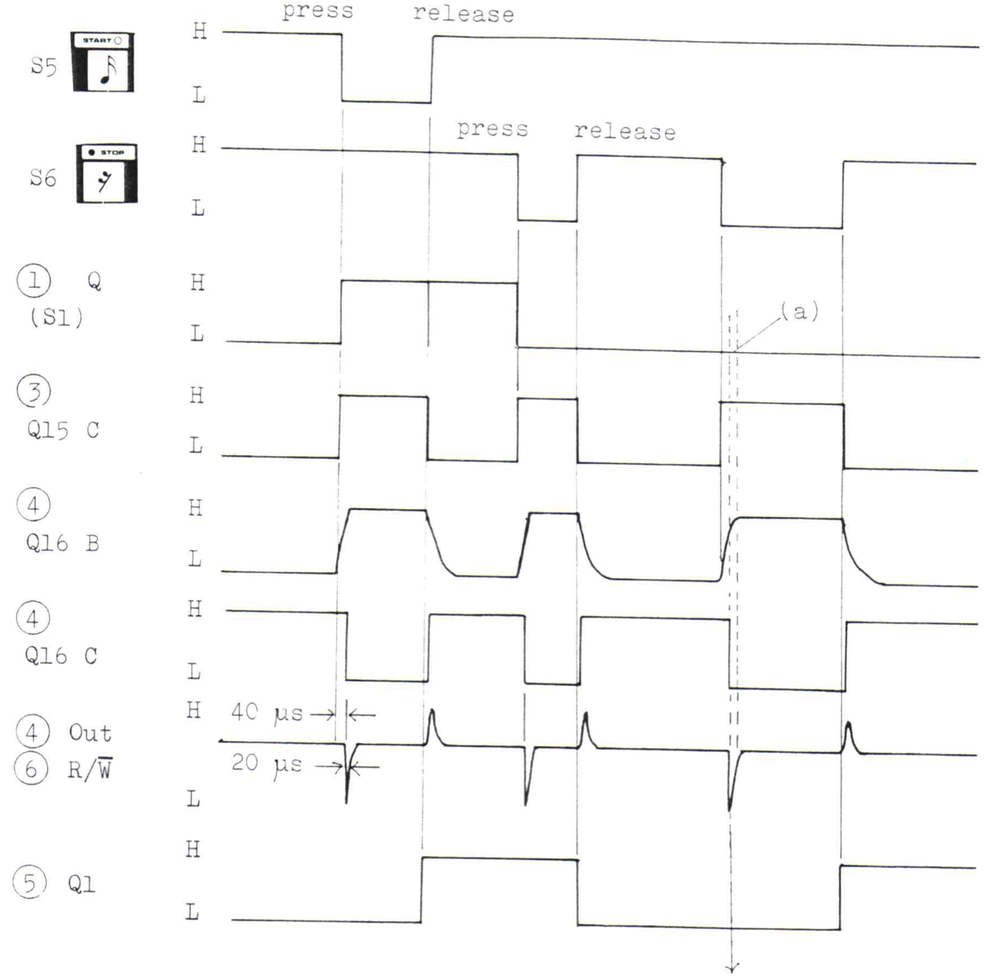
* CAUTION: Do not lay jack leads over the PCB as shown in dotted line. Since high gain stage is located on that area, the leads will provide feedback loop.



PLAY MODE



WRITE MODE



Data (a) is written during this time.

CIRCUIT DESCRIPTION

The heading numbers of this circuit description correspond to those in the block diagram above.

FEB. 21,1980

1 RS FLIP FLOP (2/4 IC3)

(a) PLAY Mode
When the START switch S5 is turned ON, the Q cutput goes to H and triggers the Clock Generator (2). Mhen the STOP switch S6 is turned ON, the Q output goes to L and the Clock Generator stops oscillation. At this time, the Q output goes to H and resets the Binary Counter (5)

(b) WRITE Mode
The Q output goes to H when S5 is turned ON, and goes to L when S6 is turned ON. This condition is written in the Memory IC1 as a data.

2 CLOCK GENERATOR (2/4 IC3)

The frequency of this oscillator is controlled with TEMPO VR-5. This oscillator functions in PLAY mode only, and feeds clock pulses to the Counter (5)

3 SCHIMITT TRIGGER (Q15, 17, 18)

This circuit functions in WRITE mode only. The collector of Ql5 goes H when either the START switch S5 or the STOP switch S6 is turned ON, and goes to L when the switch set to ON is turned OFF.

4 DELAY CIRCUIT (Q16)

The output from the Schmitt circuit (3) is intergrated, and fed to the base of Q16. Then the signal is trimmed to square wave at collector of Ql6. This output signal is differentiated and becomes pulses, and then is applied to the R/~W terminal of IC1.
The two pulses lag a little behind edges of Scmitt (3) output pulse.

5 DUAL BINARY COUNTER (IC2)

This circuit counts pulses from the clock generator (2) in PLAY mode, and counts pulses from the Schmitt trigger (3) in WRITE mode, and then outputs binary-coded signals from the terminals Ql-Q5; Ql-Q4 denote 16 steps composing each rhythm. Signal from Q5 is applied to A7 only when the VARIATION switch is set to AB.
To the terminal A7, the L level voltage is given when the switch is set to A and H when switch is set to B.

6 256 x 4 BIT CMOS MEMORY (IC1)

Reading/writing from/to this memory is as described below. The upper 3 bits designate rhythms 1-8, the next one bit designates VARIATION A and B, and. the lower 4 bits 16 steps in one rhythm. In PLAY mode, the terminal CE2 is connected. to the Clock generator output. The memory functions only when the clock is H, and outputs H's or L's from DO 1-4. (When the clock is L, DO 1-4 becomes high impedance.)

In WRITE mode, when the terminal R/~W becomes L,a data from the flip flop is written in one of DI 1-4 via Sl.A previously stored data is rewritten from DO via R61-R64 to the remaining three DI's.

The Vcc of this rnemory chip is directly connected to the dry cells regardless of power switch positions, since the chip draws only a very slight idling current during stand-by. As a result, the data is guaranteed to be stored as long as the dry cells maintain voltage value higher than a specified. level. The capacitor C39 (22 mfd.) connected to the terminal Vcc can substi- tute for the dry cells by its charge for several minutes when the cells are absent during replacement.

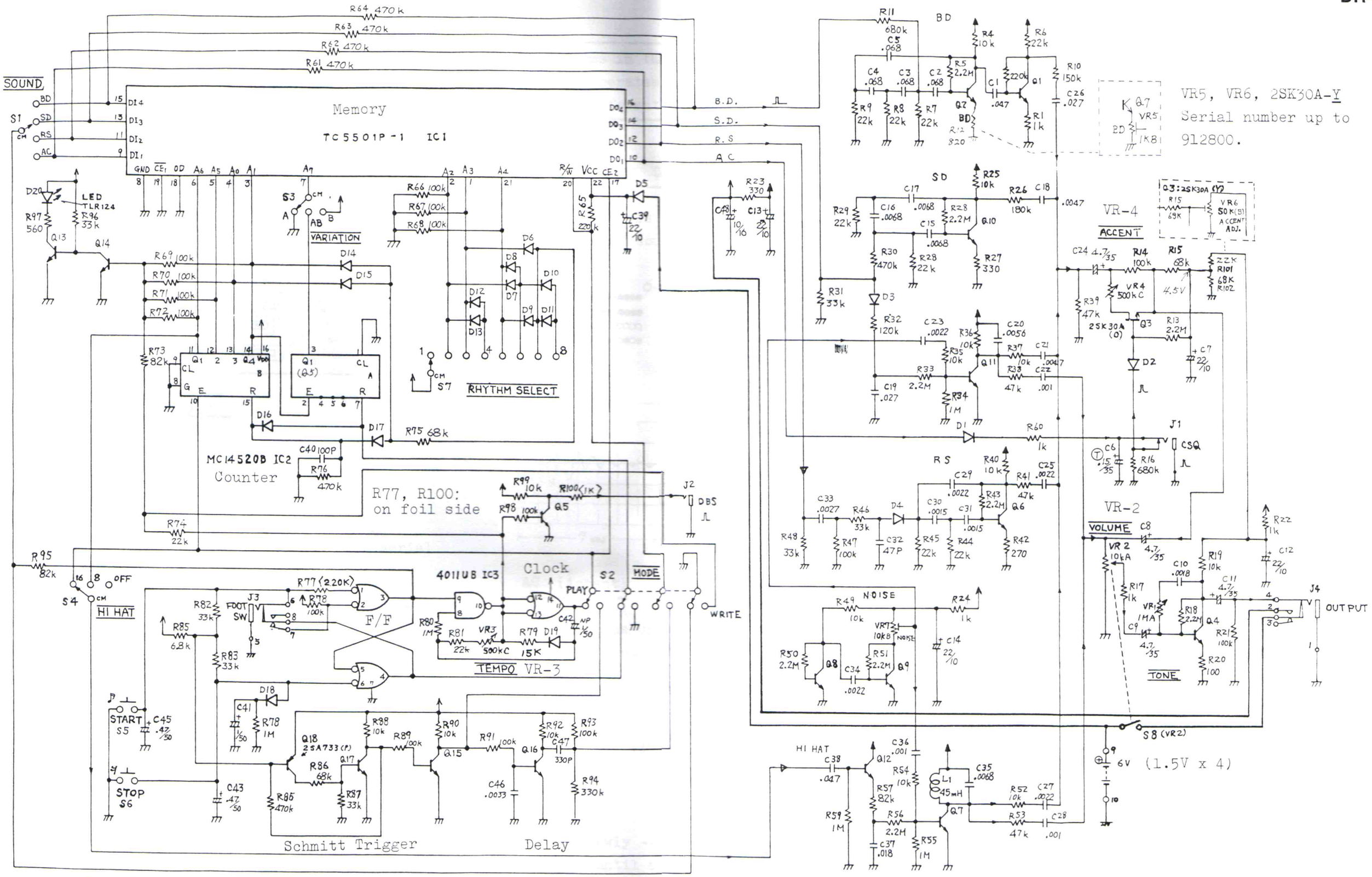
7 VOlCE GENERATOR (Ql, 2, 3, 7, 8, 9, 10, ll)

BD, SD and RS are triggered by pulses from the respective DO's. HI HAT is triggered by pulses from the counter IC2 or the Clock gen- erator IC3 by every step or every other step.

8 ACCENT (Q3)

Each sound source output is mixed and outputted through the resis- tor network in which Q3 is connected in parallel.When ACCENT pulse is outputted from DO l, Q3 turned ON, and in this ON period the signal amplitude increases. The DO l pulse can be externally out- putted through the CSQ jack.When this jack is enga.ged,

however,the
ACCENT function of the DR-55 proper becomes invalid.



Serial number up to 923500

IC3	--	CD4011UB only
VR-3	--	500KC
C42	--	1mfd N.P.
R79	--	6.8K
R81	--	22K

with 923600

IC3	--	TC4011UBP or CD4011UB
VR-3	--	1MC
C42	--	0.47mfd N.P.
R79	--	15K
R81	--	47K

Q13-17 : 2SC945- P or Q

PARTS LIST

061-290 Chassis no.290 (panel)
061-291 Chassis no.291
061-292 Chassis no.292(battery compartment lid)
111-019 Bush no.19 (rubber foot)

016-077 Knob no.77 TONE, ACCENT
016-078 Knob no.78 VOLUME, TEMPO
016-125 Knob no.125 RHYTHM SELECT

009-026 Jack HLJ-0235-01-030 $\frac{1}{4}$"
009-048 Jack SG-8026 mini. DBS, CSQ

PCB

150-002 RH-2 (PCB 052-537)

SWITCH

001-183 SSB02335 slide HI HAT, VARIATION
001-228 SQPR24-12P slide SOUND
001-293 SSP-04205 rotary RHYTHM SELECT
001-299-1 KED-10903-1 START assy w/key top,
001-299-2 KED-10903-2 STOP cap and mark
*Cap and mark are available separately.

POTENTIOMETER

028-755 VM10RC38C 1MA VR1 TONE
028-372 VM11R5M1411 10KA w/sw VR2 VOLUME
028-776 VM10RC38C 500KC VR4 ACCENT
VR3 TEMPO--S/N up to 923500
028-777 VM10RC38C 1MC VR3 with S/N 923600
030-519 EVNK4AA00B13 1K trimmer
030-522 EVNK4AA00B54 50K S/N up to 912800
030-521 EVNK4AA00B14 10K

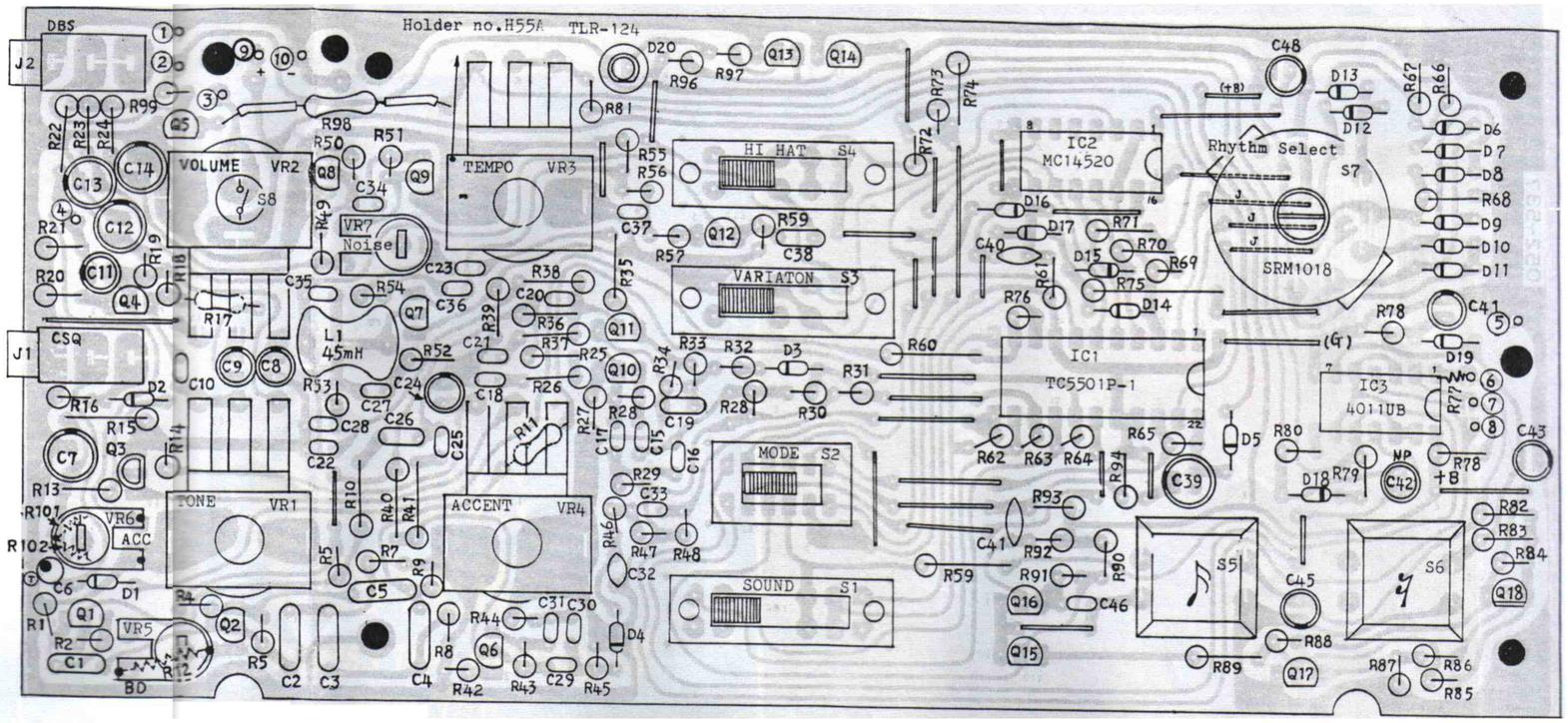
SEMICONDUCTOR

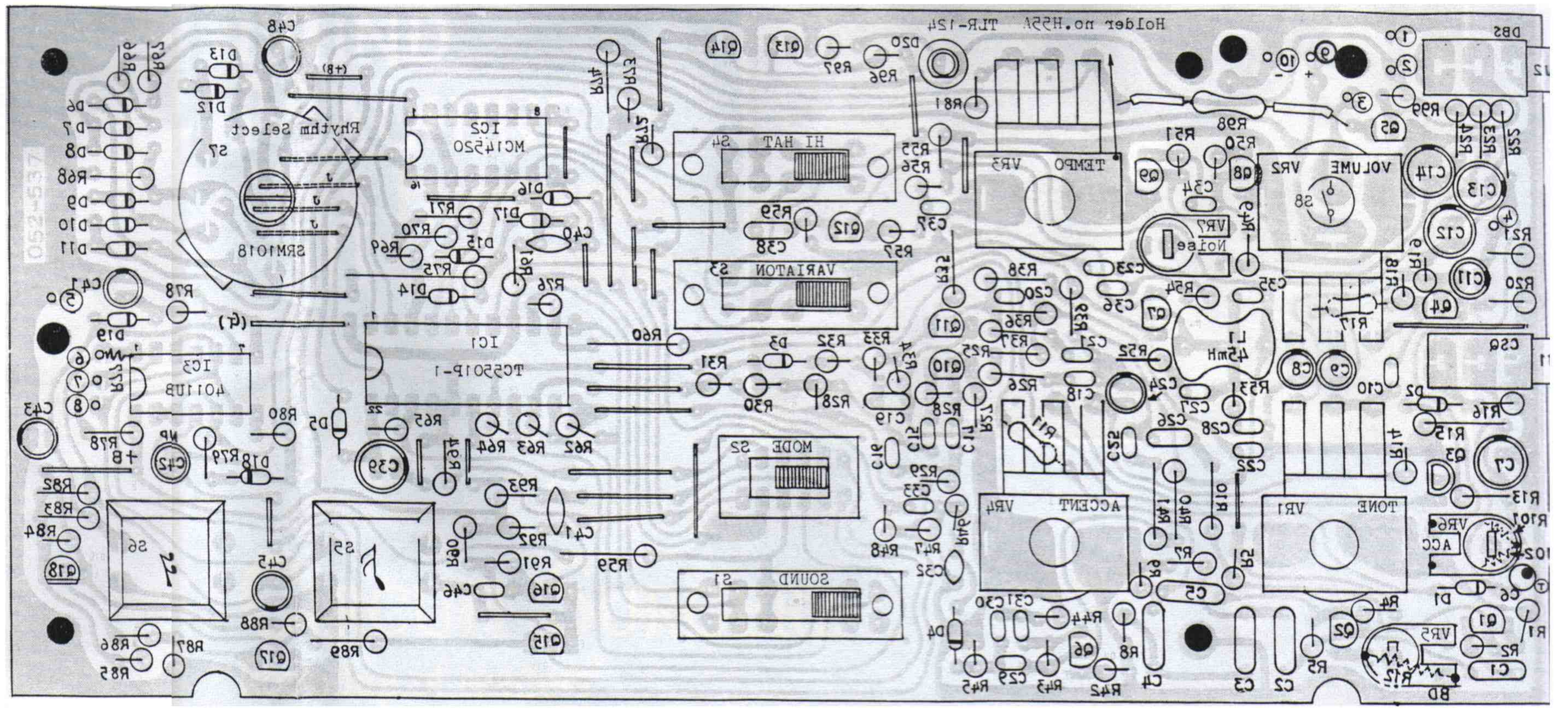
017-023 2SC945-P transistor
017-091 2SK30A -O or -Y see circuit dia.FET
017-024 2SA733-P transistor
018-014 1S2473 or equiv. diode
019-028 TLR-124 red LED
020-030 TC-5501P-1 1024-bit CMOS RAM
020-081 CD-4011UBE or TC4011UBP
refer to circuit diagram
020-166 MC-14520P dual binary up counter

OTHERS

022-030 Choke coil no.30 45mH
120-002 Sleeve nut no.2 3 x 16.4 mm
064H55A Holder H55A potentiometer
012-050 Battery case TH-1303/4B
010-001 Battery connector w/strap
123-014 Screw 3x8mm battery compartment lid
107-059 Cushion no.59 battery
Cover (felt strip) slide switch

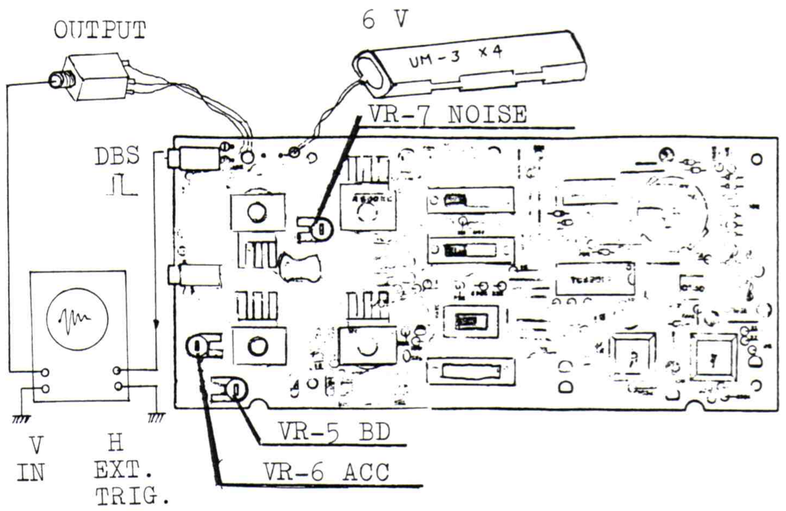
RH-2(150-002) (PCB 052-537)





ADJUSTMENT & CHECKING

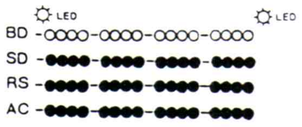
(For writting rhythm patterns, refer to page 4 of the DR-55 OWNER's Manual.)



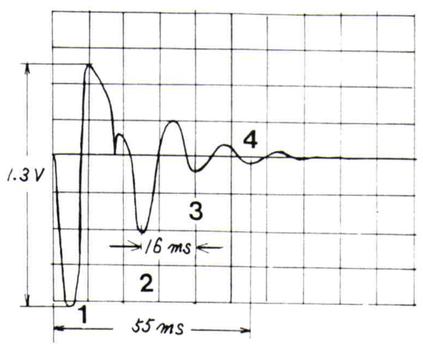
BD (Bass Drum)

No adjustment is needed for the units with serial numbers 912900 and subsequent, -just check.

With following settings, write pattern into DB channel.



RHYTHM SELECT:	1	VOLUME:	MAX
VARIATION:	A	MODE:	WRITE
HI HAT:	OFF	SOUND:	BD

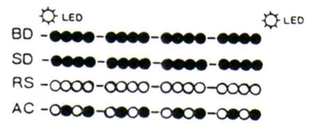


Set MODE to PLAY.
Press START.
Set TEMPO for 100 ms DBS pulse interval.
Adjust VR-5 for 55 ms decay time.

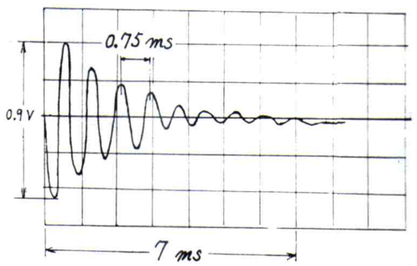
The waveforms in this page will be obseved when DR-55 operates from 6 V dc and will vary with different supply voltages.

RS (Rim Shot) Check only

With panel controls set as below, write and reproduce RS sound.



RHYTHM SELECT:	1
HI HAT:	OFF
VOLUME:	MAX
TONE:	MAX
ACCENT:	MIN
SOUND:	RS
	AC



AC (Accent)

(No need for the units with serial numbers 912900 and subsequent.)

While sounding RS in the same manner as above, set controls:

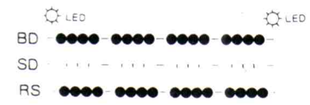
ACCENT: MAX	VARIATION: A
TEMPO: MAX	SCOPE's Time Base: 0.5 ms
HI HAT: OFF	

Turn VR-6 slowly -- in the direction AC increases-- until accenturated RS becomes double normal RS amplitude.
Note: Turning effect of VR-6 is delayed because of time constant in that circuit.

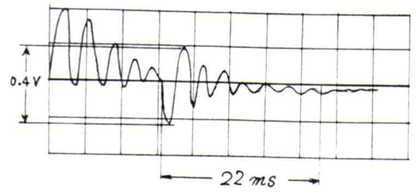
SD (Snare Drum) check only

With the following settings, write into SD channel.

RHYTHM SELECT:	1
VARIATION:	A
HI HAT:	OFF
VOLUME:	MAX
ACCENT:	MIN



Set MODE to PLAY.
Press START.
Minimize NOISE by turning VR-7.



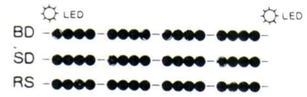
Adjust TEMPO for 100 ms DBS pulse interval.
Check displayed waveform for the figure above.

HI HAT

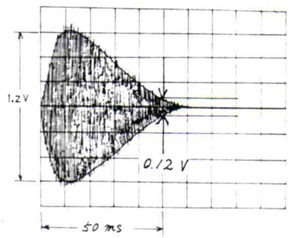
Clear all the memories in BD, SD, and RS channels.

Set panel controls:

RHYTHM SELECT:	1
VARIATION:	A
HI HAT:	12-16
VOLUME:	MAX
ACCENT:	MIN



Press START.
Adjust VR-7 for 1.2 Vpp.



CSQ and DBS (observed at jacks)